

## CLAIMS

What is claimed is:

1. A ground pad structure for preventing solder extrusion, comprising:
  - a ground plane, which is made of a conductive material and provided on a substrate of a semiconductor package; and
  - a plurality of ground pads formed on the ground plane;
  - wherein a part of the ground pads, which are located on the circumference of the ground plane, are non-solder mask defined ground pads.
2. The ground pad structure for preventing solder extrusion of claim 1, wherein the non-solder mask defined ground pads disposed on the circumference of the ground plane are protruded from and partially extended from the circumference of the ground plane.
3. The ground pad structure for preventing solder extrusion of claim 2, wherein the ground pads are arranged in a matrix array.
4. The ground pad structure for preventing solder extrusion of claim 2, wherein the ground plane is disposed on a central portion of the substrate of the semiconductor package.
5. A semiconductor package having a ground pad structure for preventing solder extrusion, comprising:
  - a substrate, which has an insulative dielectric layer, a plurality of conductive traces disposed above and beneath the dielectric layer, and an insulative layer for covering the conductive traces and the dielectric layer and having a plurality of openings, wherein a non-ground pad is formed on a terminal of each of the conductive traces and exposed from one of the openings;

a ground pad structure, which has a ground plane made of a conductive material, and a plurality of ground pads formed on the ground plane, wherein the ground plane is provided on the dielectric layer of the substrate and covered by the insulative layer, and the ground pads are exposed from the openings of the insulative layer, and wherein a part of the ground pads, which are disposed on the circumference of the ground plane, are non-solder mask defined ground pads;

a semiconductor chip, which has an active surface and a corresponding inactive surface, the active surface being formed with a plurality of non-ground conductive metal solder means and ground conductive metal solder means so as to electrically solder the non-ground conductive metal solder means and ground conductive metal solder means of the semiconductor chip to the corresponding non-ground pads and ground pads on the substrate;

an encapsulant body, which encapsulates the semiconductor chip, the conductive metal solder means, the insulative layer, and a portion of the dielectric layer; and

a plurality of conductive elements implanted under the substrate.

6. The semiconductor package having a ground pad structure for preventing solder extrusion of claim 5, wherein the semiconductor package is a flip-chip semiconductor package.

7. The semiconductor package having a ground pad structure for preventing solder extrusion of claim 5, wherein the dielectric layer is made of an insulative material selected from the group consisting of Bismaleimide Triazine Resin, Polyimide, FR-4 Resin and FR-5 Resin.

8. The semiconductor package having a ground pad structure for preventing solder extrusion of claim 5, wherein the insulative layer is a solder mask layer.

9. The semiconductor package having a ground pad structure for preventing solder extrusion of claim 5, wherein the non-solder mask defined ground pads disposed on the circumference of the ground plane are protruded from and partially extended from the circumference of the ground plane.

10. The semiconductor package having a ground pad structure for preventing solder extrusion of claim 5, wherein the non-ground pads are non-solder mask defined non-ground pads.

11. The semiconductor package having a ground pad structure for preventing solder extrusion of claim 10, wherein the non-solder mask defined non-ground pads are exposed from the openings of the insulative layer, each opening being sized larger than the corresponding non-ground pad for exposing the non-ground pad.

12. The semiconductor package having a ground pad structure for preventing solder extrusion of claim 5, wherein the conductive metal solder means are solder balls or solder bumps.

13. The semiconductor package having a ground pad structure for preventing solder extrusion of claim 5, wherein the conductive elements are solder balls.

14. The semiconductor package having a ground pad structure for preventing solder extrusion of claim 5, wherein the non-ground pads and the ground pads are arranged in a matrix array.

15. The semiconductor package having a ground pad structure for preventing solder extrusion of claim 5, wherein the ground plane is disposed on a central portion of the substrate.